

ABSTRACT OF THE DISCLOSURE

A technique efficiently corrects multiple storage device failures in a storage array using a combination of a single diagonal parity group and multiple row parity groups.

The storage array comprises a plurality of concatenated sub-arrays, wherein each sub-
5 array includes a set of data storage devices and a parity storage device. Each row parity group is associated with a sub-array of the array. The array further includes a global parity storage device holding diagonal parity computed across the concatenation of the sub-arrays. Instead of requiring that each parity group contain both a row parity device and a diagonal parity device, the array is composed of a collection of row parity groups. Di-
10 agonal parity is calculated across the full array.